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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,621	08/22/2003	Shunsuke Toshioka	116419	8263

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EXAMINER

TRAN, BINH Q

ART UNIT	PAPER NUMBER
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3748

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/645,621

Applicant(s)

TOSHIOKA ET AL.

Examiner

BINH Q. TRAN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 24-27 is/are rejected.
- 7) ☒ Claim(s) 20-23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 09/04/2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in–

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

*Claims 1-19 and 24-27 are rejected under 35 U.S.C. 102 (b) as being anticipated by Yamashita et al. (Yamashita) (Patent Number 6,058,700).*

Regarding claims 1, 14-15, and 27, Yamashita discloses a exhaust emission control apparatus for an internal combustion engine (1), comprising: an exhaust passage (e.g. 15, 23, 24); a NOx retainer agent (e.g. 16) that is provided in the exhaust passage, and that takes up and retains NOx from an incoming exhaust gas if an air-fuel ratio of the incoming exhaust gas is lean of stoichiometry, and that releases NOx retained by the NOx retainer agent if the air-fuel ratio of the incoming exhaust gas is substantially stoichiometric or rich of stoichiometry; a sulfur component retainer agent (e.g. 21) that is provided in the exhaust passage upstream of the NOx retainer agent (e.g. 16), and that takes up and retains a sulfur component contained in the

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incoming exhaust gas; and a controller (e.g. 30) that performs a NO<sub>x</sub> releasing process of adjusting the air-fuel ratio of an exhaust gas flowing into the sulfur component retainer agent so that the air-fuel ratio of an exhaust gas flowing into the NO<sub>x</sub> retainer agent becomes substantially stoichiometric or rich of stoichiometry if NO<sub>x</sub> retained by the NO<sub>x</sub> retainer agent is to be released, and that prohibits the air-fuel ratio of the exhaust gas flowing into the sulfur component retainer agent from becoming substantially stoichiometric or rich of stoichiometry if an amount of the sulfur component retained by the sulfur component retainer agent is at least a first predetermined amount (e.g. See Figs. 14-23; col. 11, lines 12-67; col. 12, lines 1-65; col. 15, lines 25-62).

Regarding claim 2, Yamashita further discloses that the exhaust passage is provided with a bypass passage (24) that causes an exhaust gas to bypass the NO<sub>x</sub> retainer agent, and a flow regulator valve (26) that controls an amount of flow of the exhaust gas flowing into the bypass passage, and wherein if the amount of the sulfur component retained by the sulfur component retainer agent is at least a second predetermined amount and it is possible to release the sulfur component from the sulfur component retainer agent, the controller causes a predetermined condition for releasing the sulfur component to be fulfilled so as to release the sulfur component from the sulfur component retainer agent, and causes at least a most portion of the exhaust gas to flow into the bypass passage by controlling the flow regulator valve (e.g. See Figs. 14 and 21; col. 14, lines 48-65; col. 15, lines 1-21).

Regarding claim 3, Yamashita further discloses that the predetermined condition for releasing the sulfur component is a condition that the air-fuel ratio of the exhaust gas be substantially stoichiometric or rich of stoichiometry and a temperature of the sulfur component

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retainer agent be at least a sulfur component release temperature (e.g. See Figs. 14-23; col. 11, lines 12-67; col. 12, lines 1-65; col. 15, lines 25-62).

Regarding claim 4, Yamashita further discloses that the when it is possible to release the sulfur component from the sulfur component retainer agent means when it is possible to easily fulfill the condition for releasing the sulfur component (e.g. See Figs. 14-23; col. 11, lines 12-67; col. 12, lines 1-65; col. 15, lines 25-62).

Regarding claim 5, Yamashita further discloses that the first predetermined amount and the second predetermined amount are equal (e.g. See Figs. 14-23; col. 11, lines 12-67; col. 12, lines 1-65; col. 15, lines 25-62).

Regarding claims 6 and 16, Yamashita further discloses that the exhaust passage is provided with an annular passage (24) that branches from a branching portion of the exhaust passage and returns to the branching portion and that has the NO<sub>x</sub> retainer agent in an intermediate portion of the annular passage, and a flow regulator valve (26) that controls an amount of flow of an exhaust gas into the annular passage and a direction of flow of the exhaust gas into the annular passage, and wherein if the amount of the sulfur component retained by the sulfur component retainer agent is at least a second predetermined amount and it is possible to release the sulfur component from the sulfur component retainer agent, the controller causes a predetermined condition for releasing the sulfur component to be fulfilled so as to release the sulfur component from the sulfur component retainer agent, and causes at least a most portion of the exhaust gas to flow downstream of the branching portion without flowing into the annular passage by controlling the flow regulator valve (e.g. See Figs. 14 and 21; col. 14, lines 48-65; col. 15, lines 1-21).

Regarding claims 7 and 17, Yamashita further discloses that the predetermined condition for releasing the sulfur component is a condition that the air-fuel ratio of the exhaust gas be substantially stoichiometric or rich of stoichiometry and a temperature of the sulfur component retainer agent be at least a sulfur component release temperature (e.g. See Figs. 14-23; col. 11, lines 12-67; col. 12, lines 1-65; col. 15, lines 25-62).

Regarding claims 8 and 18, Yamashita further discloses that the when it is possible to release the sulfur component from the sulfur component retainer agent means when it is possible to easily fulfill the condition for releasing the sulfur component (e.g. See Figs. 14-23; col. 11, lines 12-67; col. 12, lines 1-65; col. 15, lines 25-62).

Regarding claims 9 and 19, Yamashita further discloses that the first predetermined amount and the second predetermined amount are equal (e.g. See Figs. 14-23; col. 11, lines 12-67; col. 12, lines 1-65; col. 15, lines 25-62).

Regarding claims 10 and 24, Yamashita further discloses that the first predetermined amount and the second predetermined amount are calculated from a temperature of the sulfur component retainer agent (e.g. See Figs. 14-23; col. 11, lines 12-67; col. 12, lines 1-65; col. 15, lines 25-62).

Regarding claims 11 and 25, Yamashita further discloses that the first predetermined amount and the second predetermined amount are calculated from a temperature of the sulfur component retainer agent and the air-fuel ratio of the exhaust gas flowing into the sulfur component retainer agent (e.g. See Figs. 14-23; col. 11, lines 12-67; col. 12, lines 1-65; col. 15, lines 25-62).

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Regarding claims 12 and 26, Yamashita further discloses that the a fuel supply device that is disposed in the exhaust passage upstream of the sulfur component retainer agent and that supplies a fuel into the exhaust gas flowing into the sulfur component retainer agent if the NOx releasing process is to be performed (e.g. See Figs. 14-23; col. 11, lines 12-67; col. 12, lines 1-65; col. 15, lines 25-62).

Regarding claim 13, Yamashita further discloses that the NOx retainer agent is supported on a particulate filter that traps a particulate substance contained in the incoming exhaust gas (e.g. See Figs. 14-23; col. 11, lines 12-67; col. 12, lines 1-65; col. 15, lines 25-62).

***Allowable Subject Matter***

Claims 20-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Since allowable subject matter has been indicated, applicant is encouraged to submit formal drawings in response to this Office action. The early submission of formal drawings will permit the Office to review the drawings for acceptability and to resolve any informalities remaining therein before the application is passed to issue. This will avoid possible delays in the issue process.

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***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents:

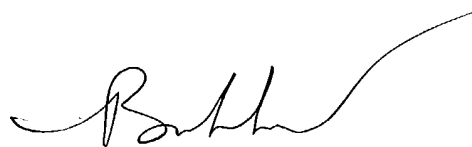
Hirota et al. (Patent Number 6233925), Takeshima et al. (Patent Number 5473890), Cullen et al. (Patent Number 5832722), Hirota et al. (Patent Number 6212885), and Yoshizaki et al. (Patent Number 6014859) all discloses an exhaust gas purification for use with an internal combustion engine.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (703) 305-0245. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reach on (703) 308-2623. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.



BT  
September 04, 2004

Binh Tran  
Patent Examiner  
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